

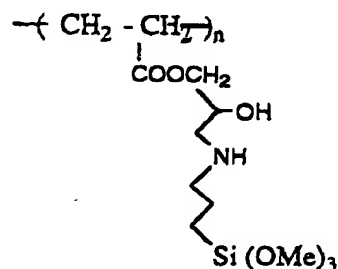
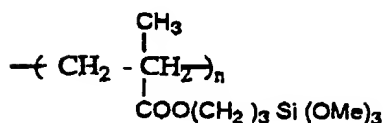
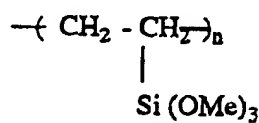
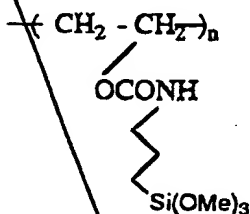
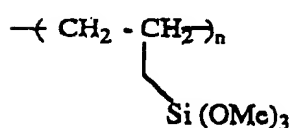
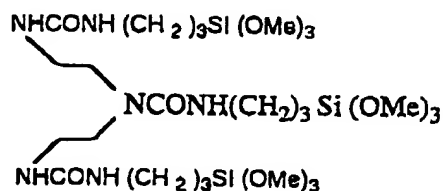
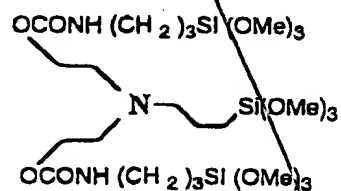
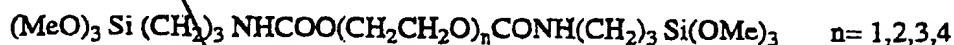
CLAIMS

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1. A method of preparing sol-gel encapsulated phospholipid vesicles comprising:
 - 5 (a) sonicating an aqueous solution of a phospholipid to form a solution of multilamellar vesicles;
 - (b) freezing and thawing said solution of step (a) at least five times;
 - (c) filtering said solution of step (b) to form a
 - 10 solution of small unilamellar vesicles; and
 - (d) curing said solution of step (c) for at least one day.
2. A method of preparing sol-gel encapsulated vesicles
 - 15 comprising:
 - (a) sonicating an aqueous acidic solution of a silyl lipid, or a mixture of a silyl lipid and a phospholipid, to form a solution of multilamellar vesicles;
 - (b) filtering said solution of multilamellar
 - 20 vesicles of step (a) to form a solution of small unilamellar vesicles;
 - (c) mixing said small unilamellar vesicles of step (b) with a solution of inorganic-organic hybrid mixture sol; and
 - 25 (d) curing the solution of step (d) for at least one day;
 - said vesicles comprising silyl lipid or a mixture of silyl lipid and phospholipid.

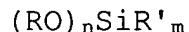
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3. The method of claim 2 wherein said hybrid mixture sol is prepared from precursor molecules of the following formula:



4. A method of performing renal dialysis by using sol-gel encapsulated lipid vesicles; said lipid vesicles comprised of phospholipid, silyl lipid or a mixture of phospholipid and silyl lipid, said lipid vesicles being positioned in the sol-gel encapsulation material.

5. The method of claim 4 wherein said silyl lipid is of the formula:



wherein:

5 R is selected from a group consisting of C₁-C₅₀ alkyl;

R' is selected from a group consisting of (CH₂)_qA and OSiR₃;

A is selected from a group consisting of hydrogen, COO⁻, OH, COOH, N⁺R₁R₂R₃, NHR'', SH, SR'' and C₁-C₅₀ alkyl;

10 R₁, R₂, R₃ and R'' are selected from a group consisting of (CH₂)_qCH₃ and (CH₂)_qSi(OR)₃;

q is a number from 1 to 50;

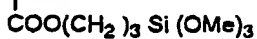
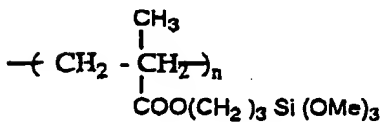
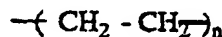
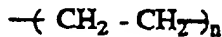
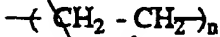
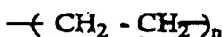
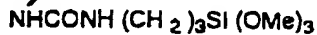
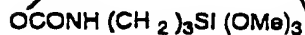
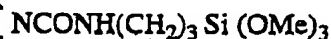
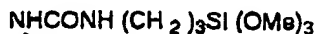
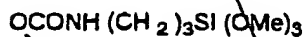
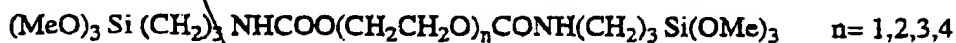
n is a number from 1 to 4; and

m is a number from zero to 3.

15 6. The method of claim 4 wherein said sol-gel encapsulation material is an inorganic-organic hybrid mixture sol.

20 7. The method of claim 6 wherein said inorganic-organic hybrid mixture sol-gel is a gel formed from an inorganic-organic hybrid mixture sol solution.

8. The method of claim 4 wherein said hybrid mixture sol-gel is prepared from precursor molecules of the following formula:



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